

Application No. 10/627,491  
Response to Office Action of December 1, 2004

**AMENDMENTS TO THE DRAWINGS**

The attached sheet of drawings includes changes to Fig. 3. This sheet replaces the original sheet of Fig. 3. In Fig. 3, the arrow indicating yes has been corrected to indicate no and the arrow indicating no has been corrected to indicate yes.

Attachment:            **Replacement Sheet**  
                          **Annotated Drawing Showing Changes**

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**REMARKS/ARGUMENTS**

In the Office Action of December 1, 2004, claims 1, 2, 6-8, 11, 12, 16-21 and 24 stand rejected and claims 22, 23, 25 and 26 are objected to. In this response claims 1, 17 and 20 have been amended. Claims 21 and 24 have been cancelled. Reconsideration and allowance of all pending claims are respectfully requested in view of the following remarks. No new subject matter is being added by this response.

**I. DRAWINGS.**

Corrections to FIG. 3 have been submitted. Acceptance by the Examiner is requested.

**II. CLAIM REJECTIONS.**

**A. 35 U.S.C. § 112 Rejections.**

Claims 17, 21 and 24 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter that the Applicant regards as the invention.

Considering claim 17, the Examiner argued that claim 17 conflicts with claim 20. Claim 17 has been amended to recite, in part, that the flight management system "further comprising generating a virtual waypoint associated with the new candidate active waypoint." This is similar to the limitation of claim 7 and distinctly claims the subject matter that the Applicant claims as the invention.

Claim 21 and 24 have been cancelled, rendering this rejection moot.

**B. 35 U.S.C. § 103 Rejections.**

To establish a prima facie case of obviousness under 35 U.S.C. § 103, three requirements must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest

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all the claim limitations. M.P.E.P. 2143. Because the Examiner has not established a prima facie case of obviousness the Applicant respectfully traverses this rejection.

**1. Onken in view of known art.**

Claims 1, 6-8, 11-12, 16-18, 20-21 and 24 stand rejected under 35 U.S.C. § 103, as obvious under U.S. Patent No. 6,163,744 to Onken (*Onken*). Applicants respectfully traverse these rejections.

*Onken* discloses a method for automatically resolving discontinuities that occur when an aircraft is maneuvered off course from a planned flight path. A discontinuity is a flight path that is incomplete and can not be followed continuously to the end. (Col. 3, lines 31-37). To resolve the discontinuity, *Onken* uses a search-and-selection procedure along with a navigational database. (Col. 3, lines 47-51).

Considering claim 1, *Onken* does not disclose, teach or suggest the step of "choosing a first waypoint from the waypoints of the pre-planned lateral route as a new candidate active waypoint if the aircraft is on the TO side of the wayline of the first waypoint" or "choosing a second waypoint from the waypoints of the pre-planned lateral route as a new candidate active waypoint, the second waypoint following after the first waypoint, if the aircraft is between the wayline of the first waypoint and the wayline of the second waypoint." This is conceded by the Examiner. The Examiner argues, however that *Onken* encompasses teaching calculating the return path to the next waypoint. However, while *Onken* describes criteria for its search algorithm (Col. 3, line 6 to Col. 4, line 32), it does not disclose selecting waypoints that are part of the original flight plan based on aircraft position. Instead, *Onken* determines a new flight path with new waypoints, stating: "the flight path up to this point is expanded by new path elements." (Col. 3, lines 60-61). Also, as shown in FIG. 11, which illustrates an example of how the process in *Onken* works, *Onken* choose a return path of P1 (a new waypoint) to P2 (another new waypoint that is not part of the original flight plan) to P4 (back to the original flight plan to facilitate an approach to landing). Had *Onken* covered selecting the next waypoint that is part of the original flight plan, after the plan overflow P1, P3, the next waypoint after the P1 that is part of the preplanned route would have been selected, instead of P2.

Additionally, the Examiner concedes that *Onken* fails to disclose, teach or suggest that the return path will overflow the new candidate waypoint. Instead, the Examiner notes that *Onken*

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chooses a path based on waypoints belonging to the original flight plan as well as new waypoints and determines which combination of waypoints is better associated with the standard route and a minimum diversion. The Examiner argues that it would have been obvious to one of skill in the art to eliminate the process of selecting return path routes with the standard route of *Onken* to automatically select the next waypoint as the point on the return path the aircraft will overfly.

The Examiner's proposed modification would change the principal of operation of *Onken*. *Onken* is drawn to an algorithm that is used to find a return path. Among the important parts of *Onken*'s algorithm is generating return paths with better association to the standard route and with a minimum of diversions to deal. To eliminate the use of the algorithm changes the way *Onken* works as the algorithm is the invention of *Onken*. The Examiner indicates that the algorithm of *Onken* can be eliminated when an association with standard routes is not necessary. However, the only way to determine that *Onken*'s algorithm would produce a return path that includes the next waypoint on the return path is to run the algorithm, indicating the algorithm is always needed. Thus, the proposed modification of *Onken* would change the way in which *Onken* works. Thus, the Examiner has failed to show a *prima facie* case for obviousness. As noted in section 2143 of the MPEP: "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)."

Claim 20 stands rejected for the same reasons as claim 1. Therefore, in light of the above arguments, claim 20 and its dependent claims are in condition for allowance.

Claim 1 and 20 have been amended to indicate that the new candidate waypoints are calculated if the aircraft is inside the threshold. This matches the text of the specification at paragraph 32-34 and the newly revised FIG. 3. Note that the limitation of where the aircraft was with respect to the threshold was not used by the Examiner in any claim rejection and such an amendment does not require a new search.

Considering claim 6, claim 6 depends from allowable claim 1. For at least this reason, claim 6 is allowable.

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Considering claim 7-8, The Examiner argues that in FIG. 11, P1 is a virtual waypoint to a successive waypoint P3. Further, the Examiner argues that P1 would provide an intercept point to the P3 if P3 was on the return path. However, it is clear from an examination of FIG. 11 and the accompanying text in *Onken* that P1 is not a generated virtual waypoint. For example, *Onken* indicates P1 is an actual waypoint for use on a new route, stating that P1 is a "recently-entered path point." Further since P1 provides a waypoint on a new path, nothing in *Onken* discloses that P1 or any other point on *Onken* "provides an intercept course to the new candidate active waypoint" as stated in claim 8. For at least these reason claim 7 and 8 are in condition for allowance. Additionally, claims 7-8 depend from allowable claim 1. For at least this reason, claims 7 and 8 are in condition for allowance.

Considering claims 11-12, claims 11-12 depend from claim 20. Since claim 20 is in condition for allowance, claims 11-12 are allowable.

Claim 16 stands rejected for the same reason as claim 6. For at least the reasons already discussed, claim 16 is in condition for allowance.

Claims 17-18 stand rejected for the same reason as claims 7-8 and for at least the reasons already discussed, claims 17-18 are in condition for allowance.

Claims 21 and 24 have been cancelled, rendering there rejection moot.

## 2. *Onken* in view of *Hirote*

Claims 2 and 19 stand rejected under 35 U.S.C. 103(a) as unpatentable over *Onken* et al. in view of *Hirote* et al. (*Hirote*). Claims 2 and 19 depend from allowable claim 1 and 20. Therefore, claims 2 and 19 are in condition for allowance.

## IV. ALLOWABLE MATERIAL.

The applicants appreciate that claims 22-23 and 25-26 would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claim.

Applicants note that since claims 22-23 and 25-36 depend from allowable claims 1 and 20; claims 22-23 and 25-26 are allowable for this reason as well, there is no reason to make the suggested amendments.

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**V. CONCLUSION.**

For the foregoing reasons, the present application is believed to be in condition for allowance and favorable action is respectfully requested. The Examiner is invited to telephone the undersigned at the telephone number listed below if it would in any way advance prosecution of this case.

While no other fees are believed due, the applicant hereby requests that any other required fee to maintain pendency of this case, except for the Issue Fee, be charged to Deposit Account 50-2091.

Respectfully submitted,

January 31, 2005  
Date

By

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